

**THE RED-LEGGED EARTH-MITE (ACARINA, PENTHALEIDAE)
OF AUSTRALIA**

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[Read 11 September 1941]

Family PENTHALEIDAE Oudemans 1931

This small family of mites is of considerable economic importance to Australian agriculture, for it includes at least two species which are major pests of pasture and fodder in this country. It includes four genera, all of which are represented here by at least one species in each.

The earth-mites are small soft-bodied and soft-skinned animals of a black colour, with or without red dorsal patches, and with bright red legs and mouth-parts. They are phytophagous in habit, many living in moss, but those of economic importance occur in immense numbers in pastures and vegetable gardens, where they become a serious nuisance.

The four genera may be separated by the following key:

- | | |
|---|--|
| 1. Cuticle strongly reticulated, punctured or rugose. Body not globose | Gen. <i>Stereotydeus</i> Berl. and Leonardi 1901
incl. <i>Tectopenthalodes</i> Tragdh. 1907 |
| Cuticle smooth or at most faintly hexagonally patterned in punctured lines. Body more or less globular. | 2 |
| 2. Anus dorsal. Cuticle smooth. | Gen. <i>Penthaleus</i> Koch 1835
= <i>Notophallus</i> Canest. 1886 |
| Anus ventral. Cuticle sometimes hexagonally patterned. | Gen. <i>Penthalodes</i> Murray 1877
= <i>Penthaleus</i> Koch 1835 (in part) |
| Anus terminal. Cuticle smooth. | Gen. <i>Halotydeus</i> Berl. 1903
= <i>Penthaleus</i> Koch 1835 (in part) |

Genus PENTHALEUS Koch 1835 (in part)

In Panzer, *Deutschl. Crust.*, Hft. I, tab. 12, 1835.

= *Notophallus*, Canest., *Atti Ist., Veneto.*, (6), 4, 697, 704, 1886.

PENTHALEUS MAJOR (Duges 1934)

Tetranychus major Duges 1834, in *Ann. Sci. Nat.*, (2) 2, Zool., 53.

For further synonymy see Womersley 1935, *Bull. Ent. Res.*, 26, (2), 163.

This is an introduced species, abundant in many agricultural areas in Australia, where it is an important pest on pasture and fodder crops. It also occurs in certain areas in South Africa. Its separation from the following species is discussed hereunder.

PENTHALEUS MINOR (Canestrini 1886) Fig. A-C

Notophallus minor Canest. 1886 *Acarof. ital.*, 211, tav. 18, fig. 16; Berl. 1892, *A.M.S. ital. rept.*, fasc. 61, No. 5.

I have known of the occurrence of this second European species in Australia for some time but have not hitherto recorded it. It is rather smaller than the preceding and can be distinguished as follows:

1. Movable finger of chelicerae slender and stylet-like for its whole length, and with a right-angled base; basal portion of fixed finger broadly membranous. Apical segment of palp as long as penultimate. *P. major* (Duges 1834)
2. Movable finger of chelicerae without right-angled base; basal half uniformly wide and wider than apical half. Apical segment of palp shorter than penultimate. *P. minor* (Canest. 1886)

Localities—South Australia: Morialta Gorge, Adelaide, September 1934 (H. W.). Western Australia: Katanning, June 1940 (K. R. N.).

Genus HALOTYDEUS Berlese 1891

Berlese, A., A.M.S. ital, rept., fasc. 60, No. 9.

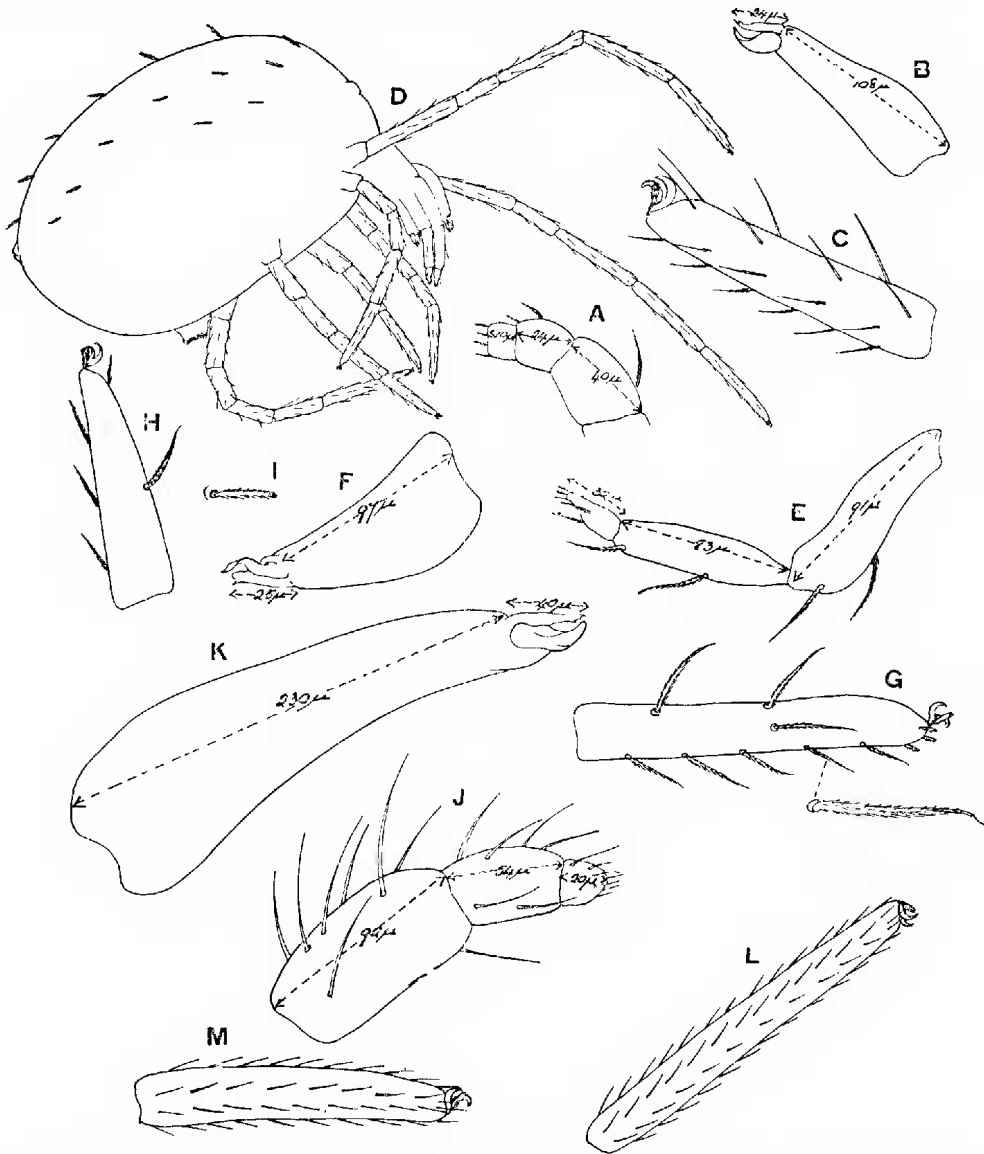
HALOTYDEUS DESTRUCTOR (Jack 1908)

Jack, R. W. 1908 Cape of Good Hope Agric. Jour., No. 31.

Tucker, R. W. F. 1925 Entom. Mem., No. 3, Dept. Agric., S. Africa.

Womersley, H. 1933 Trans. Roy. Soc. S. Aust., 57, 108

A common and well-known pest on subterranean clover and vegetables in most cultivated areas in Australia, as well as in South Africa.



A-C *Penthalcus minor* Canest., A palp, B mandible, C tarsus IV; D-I, *Halotydeus egregius* Berl. D entire, E palp, F mandible, G tarsus I, H tarsus IV, I dorsal seta; J-M *Penthalodes australicus* sp. n., J palp, K Mandible, L tarsus I, M tarsus IV.

HALOTYDEUS EGREGIUS Berlese 1891 Fig. D-I

Penthalcus egregius Berlese, A., A.M.S. ital. rept., fasc. 60, Nos. 1 and 3.

In fasc. 60, No. 3, Berlese (*loc. cit.*) does not figure or refer to the position of the anus, but this is clearly shown as terminal in fig. 5 of fasc. 60, No. 1, so that

there is no doubt but that this species should be placed in this genus. The differences between this and *H. destructor* are to be found in the mandibles, palpi, and setae of the legs and body, as figured.

I am indebted to Mr. K. R. Norris, of the Division of Economic Entomology, C. S. & I. R., for the following colour description of the living mites:

"Legs red, basal two segments pale. Mouth parts red. Body black, shining, but may have pale blotches ventrally near the genital aperture. The lips of the genital aperture and a small patch surrounding the uropore vary in colour from red to whitish. In one specimen a pale pinkish streak extended about half-way along the dorsum from the uropore, whilst ventrally it continued to connect the uropore and genital aperture."

The species has been taken by Mr. Norris in the following localities in Western Australia: Hovea, September 1935, 1936; Pemberton, November 1936; Katanning, in winters of 1939, 1940 and 1941; Narrogin, July 1937; Cranbrook, 1937; Kalgan River, July 1937; Donnybrook, November 1937, April 1938.

Genus PENTHALODES Murray 1877

Murray, A. 1877 Econ. Aptera.

This genus differs from the others in the ventral position of the anus as given in the key. In 1931 Oudemans made a separate family, the Penthalodidae, for it, and this was recognised by Sig Thor (Das Tierreich 1933) who separated it, in a key, on the basis of the hexagonal patterning of the cuticle. Vitzthum (Handb. Zool. 1931) did not recognise the Penthalodidae but retained *Penthalodes* in the Penthalidae.

The cuticular patterning of the genotype of *Penthalodes* (*P. ovatus* Koch) is, however, very different from that of members of the genus *Stereotydeus*, also placed in the Penthalidae by Vitzthum (*loc. cit.*). The description in this paper of a new species of *Penthalodes* which lacks any cuticular patterning whatever, further suggests the untenability of the family Penthalodidae.

Penthalodes australicus n. sp. Fig. J-M

Description—Large species. Colour black with red mouth-parts and legs. Length 2.25 mm., width 1.36 mm. Legs I 2.89 mm., II 1.445 mm., III 1.645 mm., IV 2.125 mm. Dorsal and leg setae very numerous and mainly simple; on dorsum 64 μ long. Mandible 270 μ long, as figured. Palpi as figured, ultimate segment less than half the length of penultimate. Tarsi I and IV as figured. Genital opening with the usual two pairs of discs. Anus ventral.

Locality—Type specimens from moss, Summers' Park, Acheron Way, Victoria, Jan. 1937 (H. W.); West Tanjil, Victoria, July 1941 (R. T. M. P.).

Genus STEREOTYDEUS Berlese and Leonardi 1901

Berlese and Leonardi 1901 Zool. Anz., 25

Womersley, H. Proc. Linn. Soc. N.S.W., 60, 79-82

This genus and the three Australian species have been previously discussed by the writer (*loc. cit.*). It was then placed in the Penthalodidae but, as noted above, this family is not satisfactorily separated from the Penthalidae.

The Australian species may be distinguished by the following key:

1. Segment IV of palp longer than III. Dorsum with an areolation of pitted hexagonal markings. Median lobe of epistrostral plate narrower than lateral lobes.

S. arcولاتus Womersley 1935

Segment IV of palp equal to or shorter than III.

2. Dorsal surface strongly rugose. Legs 5-segmented. *S. occidentale* Womersley 1935
- Dorsal surface more finely rugose. Legs 6-segmented.

S. australicus Sig Thor 1934